

commands in the non-volatile memory 412 and controls other internal IC components to perform necessary functions. The non-volatile memory 412 can be EEPROM, Flash Memory, or any type of solid-state memory. Such memory 412 stores programs for the embedded processor 404. The memory 412 content can be changed or reloaded by the PC system through the system bus interface 420.

[0038] Random Access Memory (RAM) 414, e.g., Static RAM (SRAM), may be used to store temporary data or information for the embedded processor 404. A debugging and programming interface 418 may be used by the PC system to control the IC 402 to perform debugging operations or to load new programs in the non-volatile memory 412. Security logic may also be required to prevent any unwelcome attempts to control the IC 402.

[0039] An analog to digital converter (ADC) 406 may be used to accept an analog function key input. Such an analog key input may be generated by any variety of analog input devices such as mechanical slide or dial buttons. For example, the PDA buttons 106, 108, 110, 112 may be such buttons. The ADC 406 converts the analog signal to a digital signal and provides the digital signal to the digital function key interface 416, which performs function key decoding.

[0040] The digital inputs to the digital function key interface 416 may be originated from the digital function keys or from the ADC 406. The keys may be decoded and sent to the embedded processor 404. If the ADC 406 is utilized, the digital function key interface 416 can be used to generate the key output to the system digital function keys. The keys can be sent to the keyboard controller in the system and generate the scan code for the OS under PC mode.

[0041] The LCD controller interface 424 may be used to send video data to the LCD controller on the small LCD module. A generic serial interface may be provided so that the LCD Controller Interface 424 can support different LCD controller vendors. The audio interface 426 may be used to generate the appropriate handshakes between the IC 402 and the audio subsystem during PDA mode. In the PDA mode, the host audio interface signals will be blocked. However, in PC mode, the system host audio interface controls will be directly passed to the audio subsystem 426.

[0042] Turning to FIG. 5, in conjunction with FIGS. 3 and 4, an exemplary sequence 500 for the power up of the mini-OS and initiation of PDA functions is illustrated. As illustrated at step 502, the sequence 500 begins when the system is turned on. In step 504, a determination is made whether the PDA operating mode is desired or not. This determination may be made in a number of ways by providing an input mode signal to the PC indicative of the desired operation mode. In one way, the PC may be equipped a PC power on button 102 and a PDA power on button 104 as illustrated in FIG. 1 so that if a user activates the PDA button, it is determined that the PDA mode is desired. Alternatively, if a user activates the PC power up button 102, it is determined that PC mode is desired and the system boots to normal PC operation mode at step 506. Another way of determining whether PDA mode is desired is by automatically booting up the PC in PDA mode if an external digital device, e.g., a digital camera or camcorder is coupled to the PC for downloading of data. Yet another way to determine whether PDA mode is desired is by utilizing the timer control logic 422 portion of the IC 402 to trigger the

PDA mode after a certain predetermined time has elapsed. In addition, yet another way to determine whether PDA mode is desired is by utilizing an application program or an operating system that provides such capability.

[0043] Once it is determined that the PDA mode is desired, the Mini-OS is loaded 508 in the PC system's memory 206, which may include its RAM. In the next step 510, the mini-OS initializes the system components including one or more of the CPU 203, host bridge 208, system memory 206, and IC 202. The system then waits for input from one of the function keys in the next step 512, until one of the function keys 306 is activated. At this point, the appropriate function is executed and the LCD display module 314 is updated, as appropriate, at step 514. Input signals may also be sent via the conventional keyboard 116 in some instances where so desired, and the output video display is preferably only via the PDA display 114, but may also be on the larger conventional display 118.

[0044] Those skilled in the art should recognize that although some of the above-described embodiments utilize a hardware-based OS selection, e.g., by activating the PC power up button 102 or the PDA power up button 104, other OS selection methods are contemplated as well. Such selection methods include, e.g., using a batch file or other scripting software-based method to shut down a first OS and boot to the second OS. Those skilled in the art will also recognize that the Mini-OS of the present invention could conceivably be implemented as part of a larger OS, e.g., a GUI-based OS, such as Windows®, LINUX, etc., or as a software component named something other than an "operating system," e.g., a "driver", an "algorithm", a "script", a "code", a "program", a "routine", a "subroutine", a "utility", etc., instead of being implemented as an entirely separate operating system. Such embodiments are contemplated to be within the scope of the present invention.

[0045] Those skilled in the art will also recognize a variety of software applications that may be utilized in the PDA operating mode that provide improvements over that found in traditional PCs or PDAs. Ten such applications include: 1) instant internet access; 2) wireless internet access; 3) scheduling applications; 4) address book applications; 5) low cost storage area for various digital devices; 6) voice recording applications; 7) remote access; 8) internet auction applications; 9) email applications, and 10) internet radio applications. Each of these is addressed in more detail below. Again, this exemplary list is not exclusive and those skilled in the art will recognize a variety of other similar applications where the PDA operating mode of a PC consistent with the invention will provide improvements over that found in traditional PCs or PDAs.

[0046] 1. Instant Internet Access

[0047] With a traditional PC that is off or in a low power state, a user wishing to download information from the Internet must boot up the PC, invoke the internet browser, select the appropriate web site, search the web site for selected materials, and load it into the PC. With a PC including an instant Internet access software application consistent with the invention, the above steps may be simplified. For instance, the computer user may preset web site addresses and selected materials such as news, sport events, weather, stock prices, etc. that the user requires on a more frequent basis when the PC is operating in PC mode.